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Biotechnology Benefits Both Farmer and Consumer

New genetic technologies being used to modify crop plants and animals have caused quite a stir lately, particularly in Europe. Foods that cannot be guaranteed "GMO-free" have been taken off store shelves from England to Spain. Much of the controversy centers around a lack of understanding of what genetic engineering really means.

We have an abundant food supply because of man's intervention in the natural exchange of information between plants and animals. For example, if a plant breeder finds one tomato variety that gives higher yields and another with better nutritional properties, then the breeder might choose those two varieties as parents. The breeder looks for offspring that both yield better and are more nutritious. Virtually every fruit and vegetable in our supermarkets today is a product of this type of genetic manipulation. With classical breeding you don't always get just the characteristics that you want; sometimes you also get characteristics that you don't want and the breeder has little control over this. It normally takes many years of crossing and back crossing to get the desired traits for a new variety.

Modern genetic engineering or biotechnology is much more precise. Scientists now have the tools to control what information is exchanged and from what source it comes. One example you may have encountered in the market is the Flavr Savr™ or Endless Summer™ tomato that is aimed at delivering a tastier, less spoilage-prone tomato. Cereal grains have also been engineered for increased amino acids to make them more nutritious.

Some crop plants have been engineered to resist certain insect pests. This strategy involves the introduction of a gene from the soil bacterium, Bacillus thuringiensis, that produces an insecticidal compound. This "BT approach" has been used for years by gardeners to protect their plants naturally. In the "genetic engineering" strategy the ability to make this compound has been incorporated into the plant itself, so the pesticide is very precisely targeted to where it needs to be effective. This strategy has been incorporated into many crops, such as corn, canola, tomato, walnut, and cotton.

Farmers have drastically reduced chemical pesticide usage by planting BT cotton. The use of BT cotton in 1998 may have saved U.S. cotton growers as

much as $92 million in insect control costs, according to a study conducted by the National Center for Food and Agricultural Policy. By planting BT cotton, Santa Rosa County farmers averaged less than one insecticide application last year, compared to more than twelve per season before the use of BT cotton.

Varieties of cotton and soybeans are now being grown that are herbicide tolerant. Roundup, a common lawn and garden herbicide, can be sprayed directly over Roundup Ready crops to give weed control without harming the crop. Farmers are using less energy for cultivation with herbicide tolerant crops. It is more efficient because it decreases the amount of land needed to grow more food and fiber.

In the U.S., new genetically modified crop varieties must be approved by three regulatory agencies: the EPA, the Food and Drug Administration, and the Department of Agriculture. The debate is not about science, technology, scientific risks or performance results. It is a debate of fear and uncertainty. Despite the many positive benefits genetically enhanced crops have to offer, the net result is dependant on their acceptance by the public. According to a survey released by the American Farm Bureau, nearly three-fourths of American consumers would support genetically modified crops if it means farmers can reduce pesticide use.

Genetic technology has the potential to revolutionize crop production, help cure diseases, and redefine total human nutrition. It has been said that biotechnology in the first century of the new millennium, will have more impact on human kind than the silicon chip had in the past century.

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